REMARKS

Rejection Under 35 USC 103

The Office Action rejected Claims 26-50 under 35 USC 103 over RE 32,531 (Fergason), in view of U.S. Pat. No. 5,317,140 (Dunthorn). The rejection should be withdrawn in view of the remarks below.

It is well established that in a sense, virtually all inventions are combinations of old elements *(In re Rouffet,* 47 USPQ2d 1453, 1457), and that the USPTO may often find every element of a claimed invention in the prior art *(In re Rouffet,* 47 USPQ2d 1457). If identification of each claimed element in the prior art were sufficient to negate patentability, very few patents would ever issue. *(In re Rouffet* at 1457). It is also well settled that to establish a *prima facie* case of obviousness, the USPTO must satisfy all of the following requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. *In re Fine,* 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). Second, the proposed modification must have had a reasonable expectation of success, as determined from the vantage point of one of ordinary skill in the art at the time the invention was made. *Amgen v. Chugai Pharmaceutical Co.* 18 USPQ 2d 1016, 1023 (Fed Cir, 1991), *cert. denied* 502 U.S. 856 (1991). Third, the prior art reference or combination of references must teach or suggest all of the limitations of the claims. *In re Wilson,* 165 USPQ 494, 496, (CCPA 1970). The Office Action did not establish a *prima facie* case of obviousness.

Applicants' invention relates to a display device with a touch sensor comprising (a) a transparent cover plate, (b) a transparent support plate and at least one photodetector that is mounted on the support plate and that has a photosensitive solid angle range so that the support plate lies in the photosensitive solid angle range, (c) an electrochromic cell or a liquid crystal cell located between the transparent cover plate and the transparent support plate, and (d) a radiation source arranged on at least one end face of the transparent cover plate. Applicants' invention also relates to a method that involves touch recognizing Applicants' display device so that radiation from the radiation source periodically varies with time at the frequency, and the electric signal from the photodetector is further processed so that

predominantly only that part of the signal which likewise varies periodically with time and approximately varies at the same frequency as the radiation power from the radiation source is evaluated. Applicants' invention can be used in applications in which touch screens are used. As discussed on page 1, third full paragraph, touch screens are predominantly used as input devices and display pictures, e.g., explicatory texts.

Re. 32,521 (Fergason) teaches a light modulator demodulator. The operation of such a device is explained in the abstract and in Col. 6. Fergason teaches a device including a polarizer which polarizes a beam of light. The polarized beam of light is directed through at least one liquid crystal cell. After passing the liquid crystal cell, the polarized beam of light is phase-shifted, the phase shift corresponds to a modulating electrical signal. This electrical signal is externally applied to the liquid crystal cell via conductors (Col. 5., ll.17-30). The phase shift experienced by the polarized light beam traversing through the liquid crystal cell is therefore dependent upon the amplitude of the electrical signal which is externally applied to the liquid crystal cell.

The Fergason light modulator demodulator is fundamentally different from Applicants' display device. Fergason teaching a device including a polarizer which polarizes a beam of light and that the polarized beam of light is directed through at least one liquid crystal cell would not have made one of ordinary skill in the art following the teachings of Fergason to modify Fergason and make a display device with a touch sensor comprising (a) a transparent cover plate, (b) a transparent support plate, (c) an electrochromic cell or a liquid crystal cell, (d) a radiation source, (e) at least one photodetector (or practice Applicants' method). Fergason teaching that after passing the liquid crystal cell, the polarized beam of light is phase-shifted, the phase shift corresponds to a modulating electrical signal, and that this electrical signal is externally applied to the liquid crystal cell via conductors would not have been suggestive of Applicants' invention.

Fergason does not provide the necessary information to arrive at the present invention. Importantly, Applicants' invention is not a polarizer. The light traversing through an electrochromic or liquid crystal cell is therefore a) not polarized and b) not modulated by an electrical signal which is externally applied to the electro-

chromic or liquid crystal cell. According to the invention, a beam of light is broken when an object comes close enough to the surface of the touch screen. This break produces a signal and the signal is detected by a photodetector. The invention taught by Fergason is suitable for a communication system. The device is not suitable as a display device with a touch sensor. The reference is silent about devices which display information and convert the touching of the display surface into an electrical signal. Accordingly, since Fergason teaches an invention that belongs to a totally different technical field from Applicants' invention, one of ordinary skill in the art following the teachings of Fergason would not have considered modifying Fergason and making or using devices with touch screens, let alone arrive at Applicants' device with a touch sensor or the other embodiments encompassed by Applicants' invention. Reconsideration is requested.

With respect to the Office Action's comments that Fergason teaches all of the elements of Applicants' invention "with the exception of providing a display device with touch sensor," Applicants submit that this is incorrect. The elements taught in the Ferguson modulator demodulator are fundamentally different from the elements of Applicants' device. The invention taught by Fergason is suitable for a communication system and is not suitable as a display device with a touch sensor. As such, since all of the elements of the Ferguson modulator demodulator related to a device that is fundamentally different from Applicants' invention, by no means does Fergason teach Applicants' claimed combination of elements.

Dunthorn does not overcome the deficiencies of Fergason. Regardless, Applicants explain below why one of ordinary skill in the art following the teachings of Fergason and familiar with the teachings of Dunthorn would not have been motivated to modify Fergason, make or practice Applicants' invention, and expect the results Applicants have obtained.

Dunthorn is directed to a system and a method for optically determining the direction of an object, such as a pointer, relative to an imaging system, particularly a system in which triangulation is employed to determine the location of a pointer within a generally planar viewing field, such as a touch screen (Abstract). Rather than using focused imaging systems to produce a sharp image at the plane of a photodetector, and to thus define the visual pen for finger position, a deliberately

diffused or blurred image is employed (Abstract). The diffusion produces a characteristic "bell-shaped" or Gaussian intensity distribution (Abstract). By recognizing the characteristic intensity distribution, the position of the maximum intensity, and thus the direction of the object, can be determined to a small fraction of the distance between sample points, with an accordingly much higher resolution than focused systems.

One of ordinary skill in the art following the teachings of Fergason and familiar with the teachings of Dunthorn would not have combined the references as has been done, because the inventions taught by Fergason and Dunthorn belong in fundamentally different technical fields. One of ordinary skill in the art following Fergason would understand that the Fergason light modulator demodulator is fundamentally different from the Dunthorn system and method that optically determines the direction of objects, such as pointers. The artisan would understand that the Fergason device polarizes a beam of light that is directed through at least one liquid crystal cell, and that after passing the liquid crystal cell, the polarized beam of light is phase-shifted, the phase shift corresponds to a modulating electrical signal, and that the electrical signal is externally applied to the liquid crystal cell via conductors. The artisan would appreciate that this is different from the Dunthorn system and method.

Further, it is noteworthy that Applicants' invention is capable of being used in touch screens that display pictures such as explicatory texts. Dunthorn does not teach a device that accomplishes this objective. As discussed above, Dunthorn teaches the use of devices that produce a deliberately diffuse or blurred image. As such, one of ordinary skill in the art following the teachings of Fergason, in combination with Dunthorn, would have been encouraged to make inventions that are fundamentally different from Applicants' invention. Reconsideration is requested.

In view of the remarks above, a Notice of Allowance is earnestly requested.

Respectfully submitted,

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